

Definitions

Type Number. This column lists the numerical-alphabetical designation assigned by the manufacturer. The Numerical Listing on page 5 has been arranged according to the industry standard, i.e., primarily by arranging the initial numerical portion in sequence, secondarily by arranging the alphabetical prefix in sequence and finally by arranging the alphabetical suffix in order e.g.

PKX2
PA3
PKX3
PKX3A
3K2500LX
3K2500SG
3K3000LQ
3K20,000LA

Code. The letter "M" in this column, indicates that there are manufacturers other than the listed manufacturer or registrant who produce this tube. A list of these manufacturers will be found in the other manufacturers list on page 127.

The letter "S" in this column, indicates that this tube is similar to some other type. A tabulation of these types will be found in the Similar Tubes list on pages 117 through 126. These similar types are those stated by the manufacturers as being similar to, a frequency variant of, or a Prototype of a given tube.

The letter "X" in this column, indicates that there are both similar types and other manufacturers of this type.

An asterisk (*) is used to designate tube types found in the Military Preferred list issued by the Department of Defense as "Military Standard Electron Tubes and Semiconductor Devices, Diode" MIL-STD-200E (2 March 1960) and MIL-STD-200E (7 July 1960) (Navy Supplement 1B).

A number sign (#) designates a reliable or premium type as indicated by the manufacturer.

Kind. A three-letter code is used to describe the generic group of tubes. This is used as the primary sorting means for the Characteristic Listing.

AMA	Amplitron Amplifier or Platinotron
AMO	Amplitron Oscillator or Stabilotron
BWA	Backward Wave Amplifier
BWO	Backward Wave Oscillator
CAR	Carcinotron
HEL	Helitron
KLA	Klystron Amplifier
KLM	Klystron Multiplier
KLO	Klystron Oscillator
MAG	Magnetron
TWA	Traveling Wave Amplifier
TWM	Traveling Wave Multiplier

Frequency. Both minimum and maximum frequency of operation are listed in gigacycles (10^9 cps) with the exception that the "letter-band" designation (i.e., S-band, X-band) is used when more specific information is unavailable. Fixed-tuned tubes are available at any frequency within the tabulated range. In the case of frequency multiplier tubes, *output frequency* is tabulated.

Duty Cycle. The duty cycle for pulsed operation is often specified as a percentage, although it may also appear as the product of the pulse-duration time (*tp*) and the pulse-repetition rate (*pr*). The tabulated value is the product of the pulse-duration time and the pulse-repetition rate times 10^4 . The following table illustrates both methods of specifying Duty Cycle and the corresponding tabulated value.

Duty cycle		Tabulated
%	(<i>tp</i>) (<i>pr</i>)	Value
0.05	0.0005	5
.1	.001	10
1.0	.01	100
10.0	.1	1K
15.0	.15	*1K (between 10% and 20%)
20.0	.2	2K

Tuning. The method by which the tube is frequency-tuned is shown by the following alphabetical code.

FX	Fixed tuned
HY	Hydraulically tuned
MEC	Mechanically tuned
TH	Thermally tuned
VT	Voltage tuned

Manufacturer. The alphabetical code refers to either the company originally registering the tube type with the Electronic Industries Association or a probable manufacturer of the type. In case of foreign tubes produced by more than one manufacturer, this column is blank. The known manufacturers will be found in the listing of Other Manufacturers beginning on page 127.

AM	Amperex Electronic Corp.
BE	Bendix Aviation Corp.
BL	Bomac Laboratories, Inc.
BT	Bell Telephone Laboratories, Inc.
CF	Compagnie Francaise Thomson-Houston
CS	Compagnie Generale de T.S.F.
EE	English Electric Valve Co.
EC	Microwave Electronics Corp.
EI	Eitel McCullough, Inc.
EM	E.M.I. Electronics Ltd.
FE	Ferranti Electric Co.
GC	General Electric Co., Ltd.
GE	General Electric Co.
GL	Geisler Laboratories
HI	Hitachi Ltd.
HP	Hughes Products

HU	Huggins Laboratories, Inc.
IT	International Telephone & Telegraph Corp.
KK	Kobe Kogyo
LI	Litton Industries
LR	Lorenz Rohren
MA	Microwave Associates, Inc.
MC	Canadian Marconi Co.
ME	Microwave Electronic Tube Co., Inc.
MU	Mullard Ltd.
NE	Nippon Electric Co.
PH	Philips Laboratories
PO	Polarad Electronics Corp.
RA	Raytheon Manufacturing Co.
RC	Radio Corporation of America
RE	Rogers Electronic Tubes & Components
SE	Stewart Engineering Co.
SF	Societe Francaise Radioelectrique
SP	Sperry Electric Tube Division
ST	Standard Telephones & Cables Ltd.
SY	Sylvania Electric Products, Inc.
TE	Telefunken G.M.B.H.
TH	British Thomson-Houston Co., Ltd.
TO	Tokyo-Shibaura (Toshiba)
TU	Tucor, Inc.
VA	Varian Associates
WE	Western Electric Co., Inc.
WH	Westinghouse Electric Corp.
WJ	Watkins-Johnson Co.

Operation. This is an alphabetical code to indicate the type or operation, as shown,
 C Continuous Wave Operation
 P Pulsed Operation (If a manufacturer has specified different operating parameters depending upon a tubes' operation either pulsed or CW, the tube is tabulated twice to include both sets of conditions.)

Ef. The nominal heater or filament voltage in volts.

If. The nominal heater or filament current in milliamperes.

Beam or Anode Volts. The maximum anode, beam or resonator voltage. All voltages and currents given in this and the following columns are maximum values (peak values in the case of pulsed tubes) as these will aid in determining the power supplies needed to operate the tube over its complete range.

Ik. The maximum cathode or plate current in milliamperes.

Po. The maximum power output.

Collector Reflector, etc. Volts. The maximum collector, reflector line, etc. voltage whichever is most applicable.

Control Volts Eg. The maximum control, focusing or grid supply voltage.

Helix Voltage. The maximum helix or delay-line voltage of traveling wave tubes.

Gain. The maximum, small-signal gain in decibels, or in the case of frequency multiplier tubes, the multiplication factor.

NF. The typical noise factor in decibels.

Pulling Factor. The pulling factor in megacycles per second. A pulling factor of less than one megacycle is indicated by *1.

Bandwidth. The frequency difference between half-power points for amplifier tubes or the electronic tuning range for oscillator tubes.

Magnetic Field. Numerical figures indicate the magnetic field strength in gauss or the alphabetical code "IM" indicates an integral permanent magnet.

Cavity. The number and type of cavities characteristic of the tube is indicated by the code.

IN	Internal Cavity
EX	External Cavity
RE	Reflex, External Cavity
RI	Reflex, Internal Cavity
#I	Number of internal Cavities
#E	Number of external Cavities
R	Reflex

Coupling. The type of output coupling of the tube is coded as follows:

CO	Coaxial
SP	Special
WG	Waveguide
WC	Waveguide or Coaxial

3.3. Unit Symbols

While the normally used electrical unit is printed at the top of each column, it will be noted that letter symbols are used following some numbers to indicate a change of unit.

Symbol	Heading	Unit
"A"	If	Amperes
"K"	Eb	Kilovolts
"A"	Ik	Amperes
"U"	Ik	Microamperes
"K"	Po	Kilowatts
"M"	Po	Megawatts
"U"	Po	Microwatts
"W"	Po	Watts
"K"	Collector Reflector Voltage	Kilovolts
"K"	Control Voltage	Kilovolts
"K"	Helix Voltage	Kilovolts
"K"	Bandwidth	Kilocycles